

What is claimed is

[1] A liquid crystal display device comprising:

an array substrate having pixel electrodes for each color of red, green and blue arranged in a matrix form;

an opposing substrate having opposing electrodes arranged in such a manner as to face the pixel electrodes of the array substrate;

a liquid crystal layer arranged in a bend alignment interposed between the array substrate and the opposing substrate; and

a filter comprising a red filter layer, a green filter layer and a blue filter layer provided on one side of the substrate, the red filter layer being arranged corresponding to the red pixel electrode, the green filter layer being arranged corresponding to the green pixel electrode, and the blue filter layer being arranged corresponding to the blue pixel electrode, wherein a gap distance between the blue pixel electrode and the opposing electrode is different from a gap distance between the red pixel electrode and the opposing electrode, and also different from a gap distance between the green pixel electrode and the opposing electrode, and satisfies followings:

$d_B < d_R$ ,  $d_B < d_G$  and

$|d_B - d_R| \leq 0.4 \text{ } \mu\text{m}$ ,

$|d_B - d_G| \leq 0.4 \text{ } \mu\text{m}$ ,

where the gap distance between the blue pixel electrode and the

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opposing electrode is represented by  $d_B$ ; the gap distance between the red pixel electrode and the opposing electrode is represented by  $d_R$ ; and the gap distance between the green pixel electrode and the opposing electrode is represented by  $d_G$ .

[2] The liquid crystal display device as set forth in Claim 1, wherein  $d_B < d_G \leq d_R$  is satisfied, where the gap distance between the blue pixel electrode and the opposing electrode is represented by  $d_B$ ; the gap distance between the red pixel electrode and the opposing electrode is represented by  $d_R$ ; and the gap distance between the green pixel electrode and the opposing electrode is represented by  $d_G$ .

[3] The liquid crystal display device as set forth in Claim 1, wherein at least the thickness of the blue filter layer is greater than the thicknesses of the red and green filters.

[4] The liquid crystal display device as set forth in Claim 1, wherein the filter is located on the array substrate.

[5] The liquid crystal display device as set forth in Claim 1, wherein the filter is located on the opposing substrate.

[6] The liquid crystal display device as set forth in any one of Claim 1 to Claim 5, wherein the liquid crystal display device further comprises

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a phase difference plate and

a pair of alignment layers placed above and below a display screen of the liquid crystal display device so as to interpose the liquid crystal display device and the phase difference plate, crossing together at approximately 45 degrees, and arranged in crossed-Nicol configuration to each other.

[7] A liquid crystal display device comprising;

a liquid crystal display cell comprising

an array substrate having pixel electrodes for each color of red, green and blue arranged in a matrix form on a display screen,

an opposing substrate having opposing electrodes arranged in such a manner as to face the pixel electrodes of the array substrate,

an orientation film formed on both the pixel electrodes and the opposing electrodes, and having a liquid crystal orientation surface in a direction vertical to the display screen,

a liquid crystal layer interposed between the array substrate and the opposing substrate, and arranged in a bend alignment oriented in a direction vertical to the display screen, and

a filter comprising a red filter layer, a green filter layer and a blue filter layer provided on one side of the substrate, the red filter layer being arranged corresponding to the red

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pixel electrode, the green filter layer being arranged corresponding to the green pixel electrode, and the blue filter layer being arranged corresponding to the blue pixel electrode, wherein a gap distance between the blue pixel electrode and the opposing electrode of the liquid crystal display device is different from a gap distance between the red pixel electrode and the opposing electrode, and also different from a gap distance between the green pixel electrode and the opposing electrode;

a phase difference plate arranged on at least one of main surfaces of the liquid crystal display cell;

a pair of alignment layers arranged interposing the substrate and the phase difference plate in crossed-Nicol configuration crossing at approximately 45 degrees to each other in a direction vertical to the display screen; and

a means for satisfying

$$\text{LRB} / (\text{LRR} + \text{LRG} + \text{LRB}) < 0.45,$$

where ratios of brightness of each color light in directions of 60 degrees right and left to that in the front direction of the display screen are represented by LRR for red light, LRG for green light and LRB for blue light respectively.

[8] The liquid crystal display device as set forth in Claim 7, wherein followings:

$$|d_B - d_R| \leq 0.4 \text{ } \mu\text{m} \text{ and}$$

$$|d_B - d_G| \leq 0.4 \text{ } \mu\text{m},$$

are satisfied, where the gap distance between the blue pixel

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electrode and the opposing electrode is represented by  $d_B$ ; the gap distance between the red pixel electrode and the opposing electrode is represented by  $d_R$ ; and the gap distance between the green pixel electrode and the opposing electrode is represented by  $d_G$ .

[9] The liquid crystal display device as set forth in any one of Claim 1 to Claim 8, wherein the liquid crystal display device is provided with a backlight.